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CENTRAL INTELLIGENCE AGENCY

REPORT [redacted]

INFORMATION REPORT

CD NO. [redacted]

COUNTRY Germany (Russian Zone)

DATE DISTR. 30 July 1951

SUBJECT Description of Process Used for Production of Fine Nickel Wire at Kupfer- und Messingwerk, Hettstedt

NO. OF PAGES 2

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PLACE ACQUIRED [redacted]

NO. OF ENCLS. (LISTED BELOW)

DATE OF INFO. [redacted]

SUPPLEMENT TO REPORT NO. 25X1X

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1. The rough cathode nickel sheets, regularly made available to the Hettstedt plant by the SAG administrative office in Berlin-Weissensee and the DDR Ministry of Trade and Material Supply, are first smelted in a high-frequency furnace having a maximum capacity of 500 kilograms. One hundred sixty kilograms of raw cathode nickel are required for every 100 kilograms of fine wire having a diameter of 0.5 mm. The smelted material is next cast in the form of rods (Bolzen), 110 mm. in diameter. Next, the rods are trimmed until smooth, on a rotary lathe, to a diameter of about 80 to 90 mm. The nickel rods are then heated in five electric chamber furnaces (Elektrokammeröfen) to a temperature of 1,100° C. The important precaution in this process is to keep the material free of sulfur.

2. After heating, the rods are rolled to a diameter of 12 mm., undergoing 16 passages through the rolling mill. The usual copper rolling mill installation is used for this process. After rolling, the rods are subjected to a superficial test by eye to make sure that they have attained the proper smoothness. The rods are then filed by hand until all imperfections (Walzzungen) are removed. Twelve women are employed in this task. The filing should be mechanized, but this is particularly difficult to accomplish in the case of nickel. Finally, the rods are placed in a grease solvent, percloytilin (sic) (perchlorethylene?), where all grease picked up in the rolling process is removed.

3. The entire process thus far, called the warm process, is carried on in the regular smelting and rolling plant at the Hettstedt firm, where other nonferrous metals, such as copper, are also processed. From here, the nickel rods enter the wire-drawing stage, the so-called cold process. The wire-drawing process is carried on centrally in one two-story building, set apart from the other buildings on the plant premises. The head of this wire-drawing section is a man named Seidel This section is not subject to any particular security measures, other than those employed in the rest of the Hettstedt plant, except that it is locked on Sundays, and visitors to the Hettstedt plant are not allowed in this section. The Kabelwerk Köpenick (formerly C.J. Vogel) in Berlin-Köpenick, which belongs to the SAG Kabel, has a similarly equipped section, which has about double the capacity of Hettstedt's. The Vogel plant has no smelting and rolling installation, however, which means that all raw nickel must first be processed in Hettstedt, from where semi-finished wire, described below, is sent to the Vogel plant for further drawing.

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4. In the wire-drawing section, the 12-mm. rods are next drawn on a Herborn drawing machine to a diameter of 6 mm. The speed of the machine must be reduced by 1/3 from that required for copper drawing. The wire is then drawn again on a Herborn drawing machine to a diameter of 0.5 mm. These two steps complete the coarse drawing process. At the present time, about 7 tons of the coarsely drawn 0.5-mm. wire are sent every month to the Vogel plant for further processing. Synthetic cutting stones, produced by the Werrawerk, Immelborn, Thuringia, are used in the coarse drawing. Between each drawing process, the wire is heated in the same Grunewald annealing furnace.

5. In the fine wire drawing process at Hettstedt, the 0.5-mm. coarse wire is first drawn to 0.2 mm. on three Kratos EA 5 drawing machines. Next the wire is drawn to its final size of 0.04 mm. on sixteen Kratos 16 drawing machines. An organic lubricant is used throughout the drawing process, constantly being squirted on the wire, re-collected, and used again after passing through a central filter. Final heating of the wire, after it has passed through the last drawing stage, is carried on in twelve Siemens-Plania rotary furnaces. A propane-butane gas is used in this process. About 3,000 kilograms of the 0.04-mm. nickel wire are now being produced at Hettstedt every month.

6. In the fine wire drawing process, cutting diamonds (Endsteine) set in steel dies (Düsen), both of which are produced principally by Carl Zeiss, Jena, are employed. Both the Hettstedt and Vogel plants have their own diamond processing sections where the cutting diamonds must be continuously polished with diamond powder. Both plants also produce some of their own end stones and dies, but only a small part. The Hettstedt plant produces about 5 per cent of its own dies. In the fine drawing process, i.e. from 0.5 mm. to 0.04 mm., seventeen different stages, that is, seventeen different size dies, are employed. The same stone is used in one die for about 8 to 16 hours, after which it is repolished and transferred to the next smaller stage. Satisfactory polishing of the drawing diamonds is the particularly critical point in the entire wire-drawing process.

7. The plant equipment in Hettstedt, furnaces and drawing machines, is more than adequate for the present task. Given more raw material and workers, the plant could easily increase its present production rate.

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